

Patent Claims

1. A method for production of a layer arrangement,
 - in which a layer composed of oxygen material
5 nitrogen material is formed over a substrate having a plurality of electrically conductive structures and/or over a part of the surface of the electrically conductive structures, by means of a plasma-enhanced chemical vapor deposition
10 process, with nitrogen material being supplied, during the supply of silicon material and oxygen material, by means of an organic silicon precursor material, with the layer of oxygen material nitrogen material being formed in such a manner
15 that an area free of material remains between the interconnects,
 - in which an intermediate layer composed of electrically insulating material is applied to the layer of oxygen material nitrogen material, and
 - 20 • in which a covering layer is selectively applied to the intermediate layer, by means of which the material-free area between the electrically conductive structures is sealed from the environment, so that the material-free area forms
25 a cavity.
2. The method as claimed in claim 1,
in which tetraethyl orthosilicate is used as the organic silicon precursor material.
30
3. The method as claimed in claim 1 or 2,
 - in which tetraethyl orthosilicate and nitrogen are used as precursors;
 - in which the flow-rate ratio of tetraethyl
35 orthosilicate to nitrogen is set between 1:10 and 1:1.
4. The method as claimed in one of claims 1 to 4,

- in which tetraethyl orthosilicate and nitrogen are used as precursors;
 - in which the flow-rate ratio of tetraethyl orthosilicate to nitrogen is set between 1:5 and 1:2.
- 5
5. The method as claimed in one of claims 1 to 4,
- in which tetraethyl orthosilicate and nitrogen are used as precursors;
 - in which the flow-rate ratio of tetraethyl orthosilicate to nitrogen is set between 11:40 and 7:20.
- 10
6. The method as claimed in one of claims 1 to 5,
- 15 in which helium is supplied as a carrier gas.
7. The method as claimed in one of claims 1 to 6,
- in which the pressure in the process chamber is set between 440 Pa and 1750 Pa.
- 20
8. The method as claimed in one of claims 1 to 7,
- in which the temperature in the process chamber is set between 300°C and 500°C.
- 25 9. A layer arrangement
- having a substrate;
 - having two electrically conductive structures on the substrate, with at least one subarea between the two electrically conductive structures being free of material;
- 30
- having a layer of material containing silicon, oxygen and nitrogen, which has been formed by means of a plasma-enhanced chemical vapor deposition process, with nitrogen material being supplied, during the supply of silicon material and oxygen material, by means of an organic silicon precursor material, with the layer being applied to the two electrically conductive structures in such a manner that an area free of
- 35

material remains between the two electrically conductive structures,

- having an intermediate layer composed of electrically insulating material on the layer composed of material containing silicon, oxygen and nitrogen;
- having a covering layer, which is formed selectively on the intermediate layer, by means of which the material-free area between the two electrically conductive structures is sealed from the environment.

10. The layer arrangement as claimed in claim 9, in which the intermediate layer is formed from silane-based silicon oxide.

11. The layer arrangement as claimed in claim 10 or 11, in which the covering layer is formed from silicon oxide, which is formed based on ozone-activated decomposed tetraethyl orthosilicate.